

Claims

1. A service gateway residing in a server at a head end operator for providing communication between a plurality of service providers and a plurality of applications running on a plurality of head end operator client devices comprising:
 - a server for communication between the service providers and the client devices;
 - an application level meta language for communication between client applications and service providers;
 - a communication link between the client devices and the service platform for transmission of messages between the client devices and the service gateway;
 - a transport protocol process residing in the client device for sending a transport level message encapsulating the meta language to a service provider; and
 - a conversion function for converting the client's message from the transport level protocol into a plurality of standard protocols for transmission to the service provider over the communication link.
2. The service gateway of claim 1 further comprising a transcoder for converting content received from a service provider into a format suitable for display on the client device.

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- 1 3. The service gateway of claim 1 wherein the service gateway performs
2 asymmetrical data compression wherein the service gateway compresses data
3 received from a client and sends the compressed data to a service provider.

- 1 4. The service gateway of claim 1 wherein the service gateway performs
2 asymmetrical data routing of data sent to the client and sent back to the service
3 provider from the client based on the size of the data and the availability of the
4 broadcast stream and the point-to-point connections between the service gateway
5 and the clients.

- 1 5. The service gateway of claim 1 wherein the service gateway receives a LHTTP
2 message encapsulating HTTP requests within a transport level message and
3 converts the LHTTP request into a standard HTTP communication protocol.

- 1 6. The service gateway of claim 1 further comprising:
2 a data name service for resolving a service identifier of an application server for a
3 client process identifying a service in a transport communication protocol
4 message.

- 1 7. The service gateway of claim 1 wherein the service gateway individually encrypts
2 each fragment of a transport level message.

1 8. The service gateway claim 1 wherein the the service gateway sets up a business
2 filter associated with a client to select information to be captured from a broadcast
3 data stream for the client based on at least one of the following: client preferences,
4 viewer profiles or transaction history.

10. The service gateway of claim 1 further comprising an offline order form.

1 12. The service gateway of claim 1 wherein the service gateway receives a message
2 from a client indicating the client's available memory and the service gateway
3 checks incoming messages directed to the client to determine that the available
4 memory is sufficient to receive the message before forwarding the message to the
5 client.

2 a registration authentication function for multiple users at a single client with
3 multiple users, through nicknames, personal identifiers and client hardware
4 identifier (HID).

1 17. The service gateway of claim 1 further comprising:
2 business agents that control transactions and control access by the service provider
3 access to user information.

1 18. The service gateway of claim 1 further comprising:
2 business agents which insert, replace and delete client identification information
3 from a message from a client to a service provider during a transaction, thereby
4 hiding the identity of the client from the service provider.

1 19. The service gateway of claim 18 wherein the amount and type of client business
2 information provided to a service provider, is guided by business rules depending
3 on an agreement between the service provider and a network operator.

1 20. The SGW of claim 19 wherein the business agents provide default values and
2 control access to user information.

1 21. The SGW of claim 11 wherein the store and forward function enables delivery of
2 a message from the client to be transmitted to a service at a later time, wherein a

3 plurality of messages are dispersed for delivery over a period of time to reduce
4 peak transmission load.

1 22. A service gateway residing in a service platform at a head end operator for
2 providing communication between a plurality of service providers and a plurality
3 of applications running on a plurality of head end operator client devices
4 comprising:
5 a server for communication between the service providers and the client devices;
6 an application level meta language for communication between client applications
7 and service providers;
8 a communication link between the client devices and the server for transmission
9 of messages between the client devices and the service gateway;
10 a transport protocol process residing in the client device for sending a transport
11 level message encapsulating the meta language to a service provider;
12 a conversion function for converting the client's message from the transport level
13 into a plurality of standard protocols for transmission to the service provider over
14 the communication link, wherein the service gateway compresses data received
15 from a client data and sends the compressed data to the service provider and the
1 service gateway performs asymmetrical data routing of data sent to the client and
2 sent back to the service provider from the client based on the size of the data and
3 availability of the broadcast stream and the point-to-point connections between

4 the service gateway and the clients and wherein the service gateway individually
5 encrypts each fragment of a transport level message.

1 23. The service gateway of claim 23 wherein the service gateway receives a LHTTP
2 message encapsulating HTTP requests within a transport level message and
3 converts the LHTTP request into a standard HTTP communication protocol.

1 24. The service gateway of claim 22 further comprising:
2 a data name service for resolving a service identifier of an application server for a
3 client process.

1 25. The service gateway claim 22 wherein the the service gateway sets up a business
2 filter associated with a client to select information for the client based on at least
3 one of the following: client preferences, viewer profiles or transaction history.

1 26. The service gateway of claim 22 further comprising an offline viewer
2 identification function which enables offline viewer payment;
3 an offline order form; and
1 a store and forward library comprising messages having delivery timing
2 constraints comprising "as soon as possible", "when connected", "after a random
3 period of time", "after a set period of time", "after a specified occurrence, event or
4 message" and "spread stored messages over available time and bandwidth.

1 27. The service gateway of claim 22 wherein the service gateway receives a message
2 from a client indicating the client's available memory, wherein the service
3 gateway checks incoming messages directed to the client to determine that the
4 available memory is sufficient to receive the message before forwarding the
5 message to the client, the service gateway further comprising:
6 sequence numbers in a message is sent from a client to the service gateway,
7 wherein sequence number is associated with one of a plurality of sequence-
8 numbered message fragments;
9 a message table wherein each message fragment sequence number is stored in a
10 table along with a time of receipt; and
11 a sliding time rejection window of recently used sequence numbers with a time
12 stamp for each sequence number wherein fragments received with a sequence
13 number that appears in the sliding window are disregarded.

1 28. The service gateway of claim 22 derived, wherein the service gateway creates a
2 session identifier from a hardware identifier and inserts a session identifier in
3 place of the hardware identifier into each communication between a client and a
4 service provider, further comprising a socket type abstraction layer created by the
5 service gateway to accommodate User Datagram Protocol (UDP) data, the socket
6 type abstraction layer running on top of UDP and encapsulating UDP into
7 transport level protocol message

1 29. The service gateway of claim 22 further comprising:
2 a registration authentication function at a single client with multiple users,
3 wherein multiple users are authenticated through nicknames, personal identifiers
4 and client hardware identifiers(HID);
5 business agents that control transactions and control access by the service provider
6 access to user information, wherein business agents insert, replace and delete
7 client identification information from a message from a client to a service
8 provider during a transaction, thereby hiding the identity of the client from the
9 service provider, wherein the amount and type of client business information
10 provided to a service provider, is guided by business rules depending on an
11 agreement between the service provider and a network operator.